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GEOMETRICS' MODEL G-822A AIRBORNE CESIUM MAGNETOMETER SENSOR

- **Airborne and mobile applications with multi-sensor array capability**
- **Automatic hemisphere switching**
- **Highest sensitivity: $< 0.001 \text{ nT}/\sqrt{\text{Hz}}$ RMS**
- **Fast sampling and low AC-field interference**
- **Very-low heading error: $\pm 0.15 \text{ nT}$ over entire 360° equatorial and polar spins**
- **Rugged and reliable**
- **Highly-stable – no sensor calibration required**
- **Reduced-sensitivity version available – no export permit required**
- **Proven record of outstanding performance with RMS Instruments' AARC500-series Real-Time Compensation systems –**
 - Up to 8 sensors, real-time total-field and tri-axial gradiometer compensation**
 - Fully integrated with comprehensive data acquisition, recording and analysis functions**



The G-822A is designed for all airborne and mobile applications on land where the combination of high sensitivity and very fast sampling rates are required. Applications include mapping geologic structure for mining, oil and gas exploration, and the detection and delineation of target bodies in environmental, UXO, utility and archeological surveys. The unit consists of a high performance low heading error cesium vapor sensor with its associated cables and driver electronics package.

The G-822A sensor uses a precise well-proven design, employing carefully selected and tested components to ensure industry-leading specifications in sensitivity, noise, heading error and absolute accuracy. A proven record of stable and reliable operation over long periods is the hallmark of the industry-standard G-822A. A single coaxial cable of up to 50 meters length supplies both 28-VDC power, and Larmor signal transmission from the sensor driver electronics to an RMS Instruments' AARC500-series Real-Time Compensation system, or a customer-supplied Larmor counter. Internal or external signal/power filter-decoupler assemblies are available to provide extremely low noise operation.

Tuning throughout the earth's field range is fully automatic, including hemisphere switching for equatorial surveys.

The sensor/electronics package is weatherproof, temperature controlled, and delivers full performance under extreme operating conditions. Accessories include special mounting clamps and orientation platforms for installation into a variety of vehicle or aircraft mounting configurations.

MODEL G-822A AIRBORNE CESIUM MAGNETOMETER SENSOR SPECIFICATIONS

OPERATING PRINCIPLE:	Self-oscillating split-beam Cesium vapor (non-radioactive).
OPERATING RANGE:	20,000 to 100,000 nT.
OPERATING ZONES:	The earth's field vector should be at an angle greater than 6° from the sensor's equator and greater than 6° away from the sensor's long axis. Automatic hemisphere switching.
NOISE:	< 0.001 nT/ $\sqrt{\text{Hz}}$ _{RMS} . (SX (export) version: < 0.02 nT/ $\sqrt{\text{Hz}}$ _{RMS} .) [Typical performance in aircraft with RMS Instruments' AARC500-series compensation system: residual errors for standard FOM maneuvers, $\sigma \approx 20$ pT, at 10-Hz sampling, 1.6-Hz bandwidth.]
HEADING ERROR:	± 0.15 nT (over entire 360° polar and equatorial spin).
OUTPUT:	Cycle of Larmor frequency = 3.498572 Hz/nT, 2 V _{p-p} coupled through the sensor power input.
MECHANICAL:	
Sensor:	2.375" (60.32 mm) diameter, 5.75" (146 mm) length, 12 oz (339 g) – any orientation in 7" (178 mm) diameter stinger.
Sensor Electronics:	2.5" (63.5 mm) diameter, 11" (279.4 mm) length, 22 oz (623 g).
Cables:	
Sensor to electronics:	Standard 162" (4.11 m).
Sensor electronics to counter:	Standard 32 ft (10 m), up to 165 ft (50 m). Coax with signal superimposed on power, requires decoupler module.
OPERATING TEMPERATURE:	–30°F to +122°F (–35°C to +50°C).
STORAGE TEMPERATURE:	–48°F to +158°F (–45°C to +70°C).
ALTITUDE:	Up to 30,000 ft (9,000 m).
WEATHERPROOF:	O-Ring sealed for operation in rain or 100% humidity.
POWER:	24 to 32 VDC, 1 A at turn-on and 0.5 A thereafter.
ACCESSORIES:	
Standard:	Power/Larmor coaxial cable (electronics to counter), standard length 10 m (max. 50 m), spare O-rings, operation manual and carrying/storage case.
Optional:	
Signal/Power Decoupler:	Signal/Power Decoupler modules are available from Geometrics and RMS Instruments. (RMS Instruments' AARC500-series Real-Time Compensation systems include an embedded signal/power decoupler module.)